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EXAMINER	
NGUYEN, KEVIN M	
ART UNIT	**PAPER NUMBER**
2674	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/089,802	KAWASE ET AL.
	Examiner	Art Unit
	Kevin M. Nguyen	2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 20 September 2005.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-70 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-70 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/20/2005 has been entered. An action on the RCE follows:

This office action is made in response to applicant's amendment filed on 09/20/2005. Claims 1-70 are amended, and claims 1-70 are currently pending in the application. An action follows below:

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Regarding claims 34, 36, 38 and 53, the word "means" is preceded by the word(s) "setting pixel luminance" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

4. Regarding claims 27 and 59, the term "m high-order bit", "n bits", "1/2m", "(n-m)", and 1/2(n-m), recited in the limitation "wherein the gray scale control, the amplitude

control is such that using m high-order bit of gray scale data represented by n bits, where m and n are arbitrary integers, a current or voltage value controlled by amplitude is outputted at intervals of 1/2m maximum value and the pulse width control is such that using (n-m) low-order bits, pulse width is controlled at intervals of 1/2(n-m) maximum values" render the claim indefinite because it is unclear whether m and n are negative or positive integers, "m" of 1/2m and "n-m" of 1/2(n-m) are superscript or non-superscript, and "n-m"=0 if n=m.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-5, 7-9, 16-18, 20, 21, 34-38, 40, 42, 49-51, 53-55 and 68-70 are rejected under 35 U.S.C. 102(e) as being anticipated by Wagner (previously cited, US 5,933,130).

6. As to claims 1, 3, 5, 7 and 20, Wagner teaches a method of driving a display panel [this invention may be used with many types of displays, see col. 7, lines 7-8], comprising:

setting a pixel luminance value to a target luminance setting value at least two times [a general level of brightness of the display is set a desired level, a range in which

the brightness will vary is then set—the range is preferably relative to the general level of brightness of the display, a time that the brightness varies within the selected range is also set, and the pattern for adjusting the brightness within the specific time and range is set, see col. 7, lines 35-42. The system continues to adjust the brightness according to the selected general level of brightness, range, period and pattern until the user resets one or more of the factors or the user stops the system, see col. 10, lines 59-64. Thus, setting brightness more of the factors corresponding to setting luminance value at least two times as claimed] at predetermined time intervals [As shown in Fig. 9, the period 64 is also selected. The period may be a fixed time interval which is preset or set by the user, i.e., a fixed period of about five minutes is selected, see col. 10, lines 19-22];

carrying out luminance value setting operations such that a luminance setting values is set to a different luminance setting value each time a luminance value setting operation is preformed, so that the luminance setting value is changed with the elapse of driving time [A default interval of five minutes is preferably selected. It will be appreciated that the brightness of the display may be adjusted at intervals of less than five minutes such that the eyes of the viewer must more frequently adjust to the brightness of the display. The brightness of the display may also be adjusted at intervals of every second or even less such that the brightness is rapidly or almost constantly changing. Alternatively, the period may be randomly chosen using signals from a random number generator in a manner similar to that described above, see col. 10, lines 23-33. In each of the embodiments of FIGS. 4, 5, and 6, the wave will be applied

at the appropriate starting point for each cycle to cause the appropriate change in brightness, see col. 10, lines 48-50].

7. As to claims 34, 36, 38 and 40, Wagner teaches a luminance correction device for a display panel, comprising:

[a user] setting pixel luminance to a target luminance setting value at least two times at predetermined intervals [a general level of brightness of the display is set a desired level, a range in which the brightness will vary is then set—the range is preferably relative to the general level of brightness of the display, a time that the brightness varies within the selected range is also set, and the pattern for adjusting the brightness within the specific time and range is set, see col. 7, lines 35-42. The system continues to adjust the brightness according to the selected general level of brightness, range, period and pattern until the user resets one or more of the factors or the user stops the system, see col. 10, lines 59-64. Thus, setting brightness more of the factors corresponding to setting luminance value at least two times as claimed] at predetermined time intervals [As shown in Fig. 9, the period 64 is also selected. The period may be a fixed time interval which is preset or set by the user, i.e., a fixed period of about five minutes is selected, see col. 10, lines 19-22];

luminance resetting means for carrying out luminance setting operations such that a luminance setting value is set to a different luminance setting value each time [Preferably, the system is configured to allow for successive brightness adjustment cycles. More preferably, the system continues to adjust the brightness according to the

selected general level of brightness, range, period and pattern until the user resets one or more of the factors or the user stops the system, see col. 10, lines 59-64];

driving means for driving pixels [the number of a particular color for a specific pixel could be increased or decreased a desired amount, the changes are implemented by a central processing unit, see col. 13, lines 19-25];

luminance measuring means for capturing luminance information from the pixels [the automatically controlled potentiometer 82 is preferably configured to work in conjunction with the manual potentiometer 80 such that the user can readily change the brightness of a display by adjusting the manual potentiometer 80 to the desired general level of brightness, see col. 12, lines 50-54].

a correction memory for storing correction values [the brightness control software 30 is preferably stored in the memory of the computer 24, see col. 6, lines 30-33];

calculating means for calculating correction values from the measured luminance information and the luminance setting value and storing the correction values to the correction memory, and correcting means for correcting a driving amount in accordance with the correction memory [The computer is configured to use this information to calculate the desired brightness for the display and the desired change in the brightness of the display, see col. 11, lines 26-30].

8. As to claim 53, Wagner teaches the luminance correction device of a display panel, comprising:

[a user] setting pixel luminance to a target luminance setting value at least two time at predetermined intervals [a general level of brightness of the display is set a

desired level, a range in which the brightness will vary is then set—the range is preferably relative to the general level of brightness of the display, a time that the brightness varies within the selected range is also set, and the pattern for adjusting the brightness within the specific time and range is set, see col. 7, lines 35-42. The system continues to adjust the brightness according to the selected general level of brightness, range, period and pattern until the user resets one or more of the factors or the user stops the system, see col. 10, lines 59-64. Thus, setting brightness more of the factors corresponding to setting luminance value at least two times as claimed] at predetermined time intervals [As shown in Fig. 9, the period 64 is also selected. The period may be a fixed time interval which is preset or set by the user, i.e., a fixed period of about five minutes is selected, see col. 10, lines 19-22];

luminance resetting means for carrying out luminance setting operations such that a luminance setting value is set to a different luminance setting value each time [Preferably, the system is configured to allow for successive brightness adjustment cycles. More preferably, the system continues to adjust the brightness according to the selected general level of brightness, range, period and pattern until the user resets one or more of the factors or the user stops the system, see col. 10, lines 59-64];

controlling means for, in the initial stage after fabrication of the panel, illumination all of the pixels in the panel one at a time, capturing luminance information from the pixels, calculating correction values from the luminance information and a luminance setting value, and storing the correction values to a correction memory as initial correction values [In a preferred embodiment, the user sets the general level of

brightness for the display and the range of brightness in which the display will automatically vary is selected by the user or preset before shipping, see col. 11, lines 58-61. Prior to the end of the period, a new random number is generated to select a new range of brightness for the subsequent period. This allows the system to continuously vary the brightness in the above-described manner until the user stops the system or the user changes one or more of the factors, see col. 12, lines 25-30].

9. As to claims 2, 9, 35 and 42, Wagner discloses wherein the luminance setting values are determined from measured luminance information, and said pixel luminance value is corrected to match the determined luminance setting value [As is known in the art, the digital-to-analog converter compares the values sent by the computer to a table that contains the matching voltage levels for the three colors needed to create the particular color and brightness. A precise amount of voltage from each electron gun then energizes each pixel to reproduce the desired color and brightness, see col. 2, lines 43-49].

10. As to claims 8, 16 and 49, Wagner teaches wherein until the difference between the measured luminance information and the luminance setting value reaches a fixed value or less, correction operations are repeated continuously [More preferably, the system continues to adjust the brightness according to the selected general level of brightness, range, period and pattern until the user resets one or more of the factors or the user stops the system, see col. 10, lines 59-64].

11. As to claims 4 and 37, Wagner teaches wherein each of luminance setting values does not exceed a preceding luminance setting value [In greater detail, the range

through which the level of brightness can be varied, whether fixed or random, can be set anywhere between zero and 100 percent of the general level of brightness, see col. 9, lines 49-51].

12. As to claims 17 and 50, Wagner teaches wherein the captured luminance information is driving current [It will be understood that this manual potentiometer 80, for example, may be manually set by the user and adjusted according to the ambient lighting conditions. It will also be understood that a potentiometer is intended to include variable resistors, solid-state devices, or the like which may be used to vary the resistance or voltage that appear across the device, see fig. 11, col. 12, lines 42-49. It will be understood that systems made in accordance with the invention can be designed for monochrome or color displays. In a color display, the brightness can be mechanically controlled by one or more potentiometers, variable resistors or other types of variable current devices. In particular, because the color and brightness of a particular pixel is controlled by the strength of the three electron beams striking the pixel, one preferred embodiment, described above, varies the voltage levels applied to one or more of the three electron guns such that the brightness is adjusted without changing the color. This allows the brightness of the display to be adjusted without changing the color, see col. 14, lines 4-15].

13. As to claims 18 and 51, Wagner teaches wherein the captured luminance information is that of the starting point of the illumination of pixels [The selected period preferably applies to one brightness adjustment cycle and determines how long it takes that cycle to run. One cycle in the case of the sine wave is shown in FIG. 4. Preferably,

the starting and ending point for the cycle at the sine wave is the midpoint of the increasing section, see col. 10, lines 33-36].

14. As to claims 21, 54 and 55, Wagner teaches wherein input luminance signals are corrected in accordance with the correction values stored in the correction memory [the computer 24 preferably has an electronic storage media such as random access memory or a hard disk. The brightness control software 30 is preferably stored in the memory of the computer 24, see col. 6, lines 30-33].

15. As to claim 68, Wagner teaches wherein at least two of the correction memory, the correcting means, and the controlling means are combined [the computer 24 preferably has an electronic storage media such as random access memory or a hard disk. The brightness control software 30 is preferably stored in the memory of the computer 24, see col. 6, lines 30-33].

16. As to claim 69, Wagner teaches an image display device comprising the luminance correction device according to claim 36 [this invention is used with liquid crystal displays. The display consists of a wide variety of known means to display text, information, graphics and the like, see col. 7, lines 8-15].

17. As to claim 70, Wagner teaches a light source comprising the luminance correction device according to claim 36 [wherein the backlight of the display is adjusted over a series of sequential time intervals in accordance with a predetermined pattern, see col. 15, lines 54-57].

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. <u>Claims 6, 13-15, 19, 22, 25-29, 39, 46-48, 52, 56-64 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner in view of Fan (previously cited, US 6,097,356).</u>

20. As to claims 13, 15, 46 and 48, Wagner teaches wherein the correction value calculations are carried out using both measured luminance information [It will be understood that a range of brightness of 5 percent, or even less, may be selected and the display will automatically be adjusted to vary within this relatively narrow selected range, or a range of more than 10 percent may be selected such that the brightness will vary over a larger range. It will be appreciated that a relatively large range may result in automatic changes to the brightness that is generally perceptible to the viewer. Alternatively, a generally narrow range can be selected such that the changes in the brightness are substantially imperceptible to the viewer. The narrow range of 10 percent or less is preferred because when combined with a relatively slow rate of change, the variations are imperceptible to the ordinary user while providing eyestrain relief, see col. 10, lines 18].

Accordingly, Wagner teaches all of the claimed limitations of claims 3 and 36, except for degradation characteristics related to either the luminance of elements for

which luminance has been measured or to the luminance of pixels for which luminance has been measured.

However, Fan teaches a method of calibrating a field emission display (FED) device or a thin cathode ray tube (CRT) device which includes if there is cathode degrading effect, above calibration process need to be performed again at a later time to correct the cathode degrading effect, see col. 7, lines 29-32.

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to change to implement the cooperation of correcting the cathode degrading effect as taught by Fan with the Wagner's CRT display devices in order to achieve the benefit of the thin CRT/FED driven by the correct driving parameters will provide images free of intensity distortions caused by each cathode's property variations (see Fan, col. 2, lines 60-64).

21. As to claims 14 and 47, Fan teaches wherein the display panel has a light-emitting surface with phosphors, and the correction value calculations are carried out using both measured luminance information and degradation characteristics related to the luminance of the phosphors [present invention is applicable to any kinds of thin CRT displays based on matrix of cold cathodes. One example is Canon's surface conducting electron display. There are several designs and driving schemes of the surface conducting electron display, see col. 15, lines 58-64. Fig. 1c shows the side of the anode plate 1 facing the cathode matrix are coated phosphors 5, see col. 5, lines 5-7. If there is cathode degrading effect, above calibration process need to be performed again at a later time to correct the cathode degrading effect, see col. 7, lines 29-32].

22. As to claims 19 and 52, Fan teaches wherein the display panel has at least an anode electrode and a light-emitting surface having a plurality of phosphors on the anode electrode, and the captured luminance information is anode current [present invention is applicable to any kinds of thin CRT displays based on matrix of cold cathodes. One example is Canon's surface conducting electron display. There are several designs and driving schemes of the surface conducting electron display, see col. 15, lines 58-64. Fig. 1c shows the side of the anode plate 1 facing the cathode matrix are coated phosphors 5, see col. 5, lines 5-7. To measure the total charge that is emitted onto the anode by a cathode, one can measure the emission current and integrate the emission current with an integrator over the time period that is allocated for that cathode to emit, see col. 14, lines 50-53].

23. As to claim 22, Fan teaches wherein the amplitude or pulse width of driving signals applied to the display panel is corrected in accordance the correction values stored in the correction memory [any combination scheme of amplitude modulation and pulse width modulation with which the luminosity of a pixel is changed by changing both the amplitude and the pulse width of the driving parameter such as voltage or current, see col. 16, lines 42-46].

24. As to claims 6 and 39, Fan teaches wherein the intervals between the luminance correction operations are varied according to the luminance degradation characteristics of display elements [if there is no cathode degrading effect, the above calibration process need to be performed only once. If there is cathode degrading effect, above

calibration process need to be performed again at a later time to correct the cathode degrading effect, see col. 7, lines 28-32].

25. As to claims 25 and 57, Fan teaches wherein a gray scale realization method for the display panel is a gray scale system such the except when an output is completed, a current or voltage value for amplitude control is changed only is an increasing direction [Any combination scheme of amplitude modulation and pulse width modulation with which the luminosity of a pixel is changed by changing both the amplitude and the pulse width of the driving parameter such as voltage or current, see col. 16, lines 42-46].

26. As to claims 56 and 66, Fan teaches wherein a gray scale realization method for the display panel is an amplitude control method or pulse width control method, wherein a correction memory has, for each pixel, a number of values equal to the number of levels of amplitude value [any pulse width modulation schemes with examples of voltage-time or current time method, and any combination schemes of amplitude modulation and pulse width modulation with which the luminosity of a pixel is changed by changing both the amplitude and the pulse width of the driving parameter such as voltage or current, see col. 16, lines 39-46. A computer want a pixel to display certain desired intensity, it will first use the look-up table of the cathode associated with the corresponding pixel in calibration memory 70 to find out the correct driving voltage for that desired intensity, write this correct driving voltage to video memory 80, and the driver electronics will use the correct driving voltages in video memory 80 to drive the field emission display, see col. 8, line 63 through col. 9, line 3].

27. Claims 24, 30-33 and 62-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner in view of Howard et al (previously cited, US 6,023,259).

28. As to claim 24, Wagner teaches all of the claimed limitations of claims 3 and 36, except wherein a gray scale realization method for the display panel is either an amplitude control method or pulse width control method.

29. As to claims 30 and 62, Wagner teaches all of the claimed limitations of claims 3 and 36, except wherein a gray scale realization method of the display panel is a driving method for realizing gray scale display comprising switching between amplitude control or pulse control and a system of gray scale control in which amplitude control and pulse width control are carried out simultaneously.

However, Howard et al teaches gray levels can be generated by either amplitude modulation and/or pulse width modulation, see col. 8, lines 1-2. A technique for driving a display panel that is capable of both pulse width modulation and amplitude modulation, see col. 4, lines 60-63. Figs. 3 and 4 represent the drive waveforms applied to the display panel, see col. 9, lines 7-8. The current modulation results in a luminance modulation and thus in the realization of gray levels, see col. 9, lines 18-20. Thus, Howard provides the technique for driving the gray scale is the same as luminance/brightness. The present invention, therefore, provides greater flexibility in driving technique. That flexibility makes the present invention more forgiving of process variations, see col. 8, lines 2-5.

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to change to implement the cooperation of gray levels can be

generated by either amplitude modulation and/or pulse width modulation as taught by Howard et al with the gray scale/luminance of Wagner in order to achieve the benefit of allow for the combination to be realized while maintaining a current drive, and therefore a uniform display, see Howard, col. 9, lines 33-35.

30. As to claim 31-33 and 63-65, Howard et al teaches wherein, when the luminance signal level to be outputted is equal to or less than a reference value, amplitude control or pulse width control is carried out, and when equal to or greater than a reference value, the system of gray scale control where amplitude control and pulse width control are carried out simultaneously is carried out to realize gray scale display [For example, low-end gray levels, that is gray levels toward black, typically require very small differences between adjacent control levels. The present invention allows those small differences to be generated using pulse width modulation between two larger control levels. The pulse width is generated by a digital circuit and determines the amount of current flowing through the OLED device more accurately than is available with prior techniques. In addition, this provides greater control of current flow over the entire array. At higher luminescence levels, amplitude modulation can be used to generate upper gray scale levels. The present inventors believe that this feature may have a significant impact on driver and system design, see col. 8, lines 6-20].

31. <u>Claims 26-29 and 58-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner in view of Fan as applied to claims 3 and 36 above, and further in view of Doherty (newly cited, US 5,619,228).</u>

32. As to claims 26-29 and 58-61, the combination of Wagner and Fan teach all of the claimed limitations of claims 3 and 36, except for wherein the gray scale control, the amplitude control is such that using m high-order bit of gray scale data represented by n bits, where m and n are arbitrary integers, a current or voltage value controlled by amplitude is outputted at intervals of 1/2m maximum value and the pulse width control is such that using (n-m) low-order bits, pulse width is controlled at intervals of 1/2(n-m) maximum values.

However, Doherty teaches a gray scale control [dithering logic 414 can map a four bit value indicating one of 16 grayscale levels into 15 subframes, see col. 16, lines 21-24], the amplitude control is such that using m high-order bit of gray scale data represented by n bits, where m and n are arbitrary integers, a current or voltage value controlled by amplitude is outputted at intervals of 1/2m maximum value and the pulse width control is such that using (n-m) low-order bits, pulse width is controlled at intervals of ½(n-m) maximum values [For a system with r-bit intensity resolution, i.e. the number of intensity levels equals 2r, and m-bit system capacity, i.e., the maximum word width available to the system intensity representation equals m, find the smallest integer k such that $[2^r - 2^k/m\text{-}k] - 2k$. Divide the m bits representing the intensity into two parts: k least significant bits (LSB) and j most significant bits (MSB), where j=m-k. Designate the LSB weights as $\{A_0, A_1, \ldots, A_{k-1}\}$ and the MSB weights as $\{B_k, B_{k+1}, \ldots, B_{m-1}\}$, see Fig. 4, col. 5, line 56 through col. 6, line 5].

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to change to implement the cooperation of the amplitude

control is such that using m high-order bit of gray scale data and the pulse width control is such that using (n-m) low-order bits as taught by Doherty with the gray scale/ brightness of the combination of Wagner and Fan in order to achieve the benefit of preventing these artifacts while maintaining a good level of resolution is needed (see Doherty, col. 1, lines 66-67).

33. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner in view of Ando et al (previously cited, US 4,672,275).

As to claims 10 and 11, Wagner teaches all of the claimed limitations of claim 3, except for correcting luminance setting values is carried out during vertical blanking periods.

However, Ando et al teaches the correction data is stored during the vertical blanking period (see col. 4, lines 39-40). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to change to implement the cooperation of the correction data is stored during the vertical blanking period as taught by Ando et al with the calibration of Wagner in order to achieve the benefit of provide high accuracy in a simple and quick adjusting operations, and provide for easy and arbitrary adjustments by an end user (see Ando et al, col. 2, lines 16-18).

34. As to claim 12, Ando et al teaches the correction data is stored during the vertical blanking period (col. 4, lines 39-40). Thus, it would have been obvious to provide adjacent pixels are not driven.

35. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner in view of Xie et al (previously cited, US 6,025,819).

36. As to claim 23, Wagner teaches all of the claimed limitations of claim 3, except wherein the correction values are calculated so as to incorporate data for gamma correction for each pixel and stored to the correction memory, wherein the correction memory has, for each pixel, values that incorporate data for gamma correction.

However, Xie et al teaches a display panel comprising gamma corrections (see fig. 5, col. 4, line 57). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to change to implement the cooperation of the gamma corrections as taught by Xie et al with the calibration of Wagner in order to achieve the benefit of provide an improved method for achieving a gray scale in a field emission display device, which provides a high number of gray scale levels (see Xie et al, col. 2, lines 9-11).

37. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner in view of Fan as applied to claim 36 above, and further in view of Xie et al (previously cited, US 6,025,819).

38. As to claim 67, the combination of Wagner and Fan teach all of the claimed limitations of claim 36, except wherein the correction values are calculated so as to incorporate data for gamma correction for each pixel and stored to the correction memory, wherein the correction memory has, for each pixel, values that incorporate data for gamma correction.

However, Xie et al teaches a display panel comprising gamma corrections (see fig. 5, col. 4, line 57). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to change to implement the cooperation of the

gamma corrections as taught by Xie et al with the combination of Wagner and Fan in order to achieve the benefit of provide an improved method for achieving a gray scale in a field emission display device, which provides a high number of gray scale levels (see Xie et al, col. 2, lines 9-11).

Response to Arguments

39. Applicant's arguments with respect to claims 1-70 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Nguyen whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 9:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick N. Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the Patent Application Information Retrieval system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the

Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 2674

KMN
December 9, 2005

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